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September 17, 2009

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: GN docket No. 09-51
       A National Broadband Plan for Our Future

Dear Ms. Dortch:

On September 16, 2009 Sam Palmisano, Chairman and CEO, IBM Corporation, and Christopher Padilla, Vice President, Governmental Programs, IBM Corporation met with Chairman Julius Genachowski to discuss the National Broadband Plan. Also attending the meeting were Blair Levin, Carlos Kirjner, and Shomik Dutta of the FCC.

Topics discussed at the meeting included the relationship between a successful broadband strategy and adoption of the applications and services which bring value to all aspects of our society including health care, education, transportation, and energy. Attached is a white paper which served as the basis for the discussion.

Please direct any questions relating to this filing to the undersigned.

Respectfully submitted,

Timothy J. Sheehy

How a National Broadband Network Enables a Smarter Planet

Pervasive and robust broadband infrastructure can enable a range of applications and services that are both socially and economically desirable for citizens, industry and government. The applications and services discussed in this paper are well understood technically, are generally deployable with today's technology and address known problems and consumer needs. However, the successful uptake of this "first wave" of broadband-enabled applications and services is more important than often acknowledged.

IBM believes that a successful uptake of these applications and services will not only provide immediate value and benefit, but also lay the foundation for future innovation over broadband by demonstrating consumer acceptance, enabling sustainable economic models and demonstrating societal value. In short, success in the near term will make it possible for innovators, entrepreneurs and governments to invest in the next wave of applications and services that can spur economic growth, create new jobs -- even new industries -- and enhance the competitiveness of U.S. business, small and large.

An estimated 2 billion people will be on the Web by 2011 – and a trillion connected objects – cars, appliances, cameras, roadways, pipelines, medical devices – comprising the "Internet of Things." IBM's vision of a Smarter Planet is premised on three facts:

- The world is becoming more instrumented
- The world is becoming more interconnected
- Virtually all things, processes and ways of working will become intelligent

A successful broadband strategy must consider the applications and services that will create this "Internet of Things" which brings value to citizens and communities in the near term, and is a catalyst for future innovation and investment.

Many of the application areas highlighted in IBM's Smarter Planet campaign, such as Telemedicine, Transportation, Metering, and Education, will only be fully realized when they are enabled by robust and pervasive broadband infrastructure. What follows are some of the Smarter Planet applications and services that IBM believes have both social and economic value – and which need a national broadband network to thrive.

Smarter Healthcare

Relevant Facts:

- 100 Million: People pushed below the poverty line by personal healthcare expenditures every year
- 1.5 Million: Errors in the way medications are prescribed, delivered and taken harm 1.5 million U.S. citizens every year
- 2 Times: In many parts of the world, healthcare costs are rising two times faster than economic growth.
- The U.S. healthcare system loses more than $100 billion a year to fraud.

Broadband is the vital underpinning of telemedicine initiatives such as:

- **Electronic health records (EHR).** EHR is expected to reduce medical errors, decrease administrative costs, and streamline the delivery of care.

- **Remote patient monitoring (RPM).** RPM devices monitor and send the patient's physiological data to the healthcare provider for analysis. Allowing for ongoing treatment calibration, RPM will likely play a major role in managing chronic conditions and reducing costly hospital readmissions. RPM can also improve the independence and quality of life of the elderly and provide peace of mind for their relatives.

IDC estimates that by increasing broadband penetration by 20% by 2012, as much as $230 billion in chronically ill health care spend could be saved over four years through the use of telemedicine by reducing the time spent per visit and reducing hospitalization costs.

Smarter Transportation Systems

Relevant Facts:
- Congested roadways cost $78 billion annually in the form of 4.2 billion lost hours and 2.9 billion gallons of wasted gas.
- Forty-five percent of traffic on some streets in New York City is people circling the block looking for parking.
- In a small business district in Los Angeles, driving around looking for parking in one year generated the equivalent of 38 trips around the world, burned 47,000 gallons of gas, and emitted 730 tons of carbon dioxide.

Transportation systems have a huge impact on the quality of our lives. Integrating available and developing technologies — cameras, sensors, dynamic signage, signals, and network connectivity — is critical to a smarter transportation system, which ultimately rests upon a high-speed, reliable, and ubiquitous broadband network. Broadband allows the installation of reliable networks to track and help manage traffic flow, easing congestion and supporting future planning initiatives. Specifically, some communities are utilizing broadband wireless connectivity to collect and transmit traffic patterns to computers, which in turn allow for traffic lights to be timed in order to avoid or relieve traffic congestion. Previously, traffic light timing was run over the PSTN; by moving to broadband wireless systems, communities are able to save money and more efficiently manage traffic.

Smart Grid / Smart Metering

Relevant Facts:

- 170 billion: Kilowatt-hours wasted each year by consumers due to insufficient power usage information.
- 36.8%: Projected growth in worldwide energy demand by 2030.
- 1/4: Proportion of worldwide CO_2 emissions created by power generation, the largest man-made source.
- According to the U.S. Department of Energy, 67 percent of all electrical energy is lost due to inefficiencies in production and distribution systems.

Policy makers, energy distributors, and regulators in many countries are looking for ways to match energy consumption with generation. Smart meters empower consumers with near real-time information about their energy usage. Data transmitted via wireless broadband networks enables consumers to better understand the costs associated with the amount of energy they are consuming and make choices that lead to energy conservation. Investing in ubiquitous broadband infrastructure allows smart metering services to be deployed to areas that do not currently have access to these capabilities. Moreover, by utilizing the broadband network, smart meters also allow utility companies to more closely and efficiently monitor energy usage and optimize grid performance.

Smarter Education

Relevant Facts:
- Developed countries, on average, spend nearly 4% of their GDP on education, and the costs are rising—up 42% between 1995 and 2004, according to an OECD study.
- Out of 30 countries, the U.S. placed 25th in math and 24th in science.* OECD, Pisa Ratings.
- The Economist magazine recently reported that more than two-thirds of higher education institutions offer online courses, and these courses are embraced by students as legitimate alternatives to face-to-face education..

The advantages of distance learning include expanding access to underserved populations who cannot attend a school by offering the educational services that they desire. Distance education also fulfills the need for lifelong learning by providing access to learners not in the traditional K-12 age group. A services and knowledge-based economy requires a different set of skills and new ways of learning. That means that the growing need for life-long education, skills acquisition, and talent refreshing requires that the educational system not only deliver the skills necessary to ensure its constituents success, but that it is also a system that is highly adaptive to individual needs and one that fosters creativity and innovation.

Education is critical not only to economic recovery but to the continued vitality of all countries worldwide. Increased Internet access and broadband access in particular, has revolutionized distance learning because with high-speed connectivity, students are able to readily access content and streaming video from any educational institution, regardless of where they are physically located. The expectation is that expansion of broadband to remote areas will help to create new as well as foster existing real-time interactive distance learning programs and initiatives. Moreover, an interconnected education system via broadband allows stakeholders the ability to gain a real-time view into what works and what does not from an education and learning perspective. Successes can be readily shared and replicated across multiple constituents and curriculum can be easily enhanced with interactive content.

Conclusion: Broadband Enables a Smarter Planet

An appropriate broadband infrastructure is critical to successfully deploy the applications discussed in this paper. IBM supports broadband deployment by all technically viable means -- wireline, satellite, cable, power lines or over wireless networks. We recognize that broadband infrastructures must also be economically feasible AND be capable of supporting a rich, compelling user experience that will enable long term sustainability.

The nation's broadband infrastructure needs to provide access to the digital economy and to enhance America's economic competitiveness. Pervasive access and bandwidth are typically the focus of discussion in describing broadband, but the ability to provide end to end service levels, ensure security and guarantee reliability also are required. We encourage the FCC to consider these characteristics in its broadband strategy development.

Sources:

- IBM Market Intelligence and Public materials
- IDC (paper sponsored by IBM)